

DRAFT
WILDLAND FIRE SUPPRESSION
AND CULTURAL RESOURCES WORKBOOK

1.0 INTRODUCTION

This workbook for Wildland Fire Suppression and Cultural Resources accompanies the *Programmatic Agreement on the Treatment of Historic Properties That May Be Affected by Fire Management Activities In Accordance With The Federal Wildland Fire Management Policy of 1995* (PA).

It offers some ideas for considering cultural resources during wildland fire suppression efforts on federal lands within agencies of the Departments of Agriculture and Interior. The Federal Wildland Fire Management Policy of 1995 and 2001 (FWFMP) requires every federal agency unit with burnable vegetation to prepare a Fire Management Plan. The PA specifies that each participating agency unit develop a cultural resources component to that Fire Management Plan that identifies how that agency unit will protect or consider cultural resources during fire management planning and actions. This Workbook offers suggestions for developing procedures and preparing the section of those cultural resource components that address fire suppression activities.

1.1 POLICY AND OBJECTIVES

Fire is a natural phenomenon and in many areas it is necessary for the perpetuation of healthy ecosystems. Fire histories throughout the continent testify to frequent, recurrent wildland fires for thousands of years. The question is not if there will be wildland fires, but when they will occur. No organization, technology, or equipment can provide absolute protection against wildland fires when unusual fuel build ups, extreme weather conditions, multiple ignitions and extreme fire behavior come together to form a catastrophic event.

In the past, cultural resource protection planning has initiated as reactions to fires that have ignited and been declared emergencies. Implementing regulations for Section 106 (36 CFR 800.12(a)) encourage agencies to develop procedures for taking historic properties into account during operations which respond to emergencies, but these same regulations also allow agencies to implement emergency operations without a planned response (36 CFR 800.12(b)). With unscheduled and unplanned responses, the results are often chaos and unneeded resource loss, while planned responses to wildland fires result in logical resource protection.

Procedures for wildland fire suppression should is to provide a planned and organizational responses to the consideration of cultural resources during wildland fire suppression activities through the integration of cultural resource specialists (CRSs) into the fire suppression effort as Technical Specialists in the Incident Command System. This organizational response will result in a greater degree of cultural resource protection and a lower level of resource loss. Even with a well-developed response plan, however, cultural resource protection will not be absolute.

The Federal Wildland Fire Management Policy in 1995 established several basic guiding principles, the most relevant of which to this effort are:

- Protection of human life as the first priority in wildland fire management.
- Property and natural/cultural resources jointly become the second priority.

- Protection decisions for cultural resources will be based on values to be protected and other considerations.
- The consideration of cultural resources during fire suppression will be implemented through the Incident Command System (ICS).
- Cultural resource consideration will be vested in the position of Technical Specialist within the ICS.
- Damage to cultural resources resulting from fire suppression activities is the responsibility of the federal agency that conducted those activities.
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1.2 FUNDING

Wildfire suppression activities are funded through the Wildland Fire Appropriation, Operations Activity, Suppression Subactivity. This source of funding shall support cultural resources personnel assigned to fire suppression for the purpose of planning and implementing activities related to protecting and/or minimizing the effects of the fire on cultural resources.

The assessment and rehabilitation of damage to cultural resources as a result of fire suppression activities are usually funded through the Wildland Fire Appropriation, Operations Activity, Emergency Rehabilitation Subactivity.

2.0 INCIDENT COMMAND SYSTEM

2.1 ORGANIZATION

Fire suppression on federal lands is guided by the National Interagency Incident Command System (ICS). The organizational structure of the ICS has developed over time by Federal fire protection agencies. The ICS that was originally developed in California in 1970s under the FIREScope program, and made the transition into a national program called the National Interagency Incident Management System. At the time, ICS became the backbone of a system for all federal agencies with wildland fire management responsibilities.

The Incident Command System has considerable flexibility. It can grow or shrink to meet different needs, making it a cost-effective and efficient management system. The ICS guides decision-making through organizational functions and hierarchy. The organizations staff builds from the top down, with responsibility and performance placed initially with the Incident Commander. As the need exists, four separate sections can be developed, each with several potential units. These sections include Operations, Planning, Logistics, and Finance. The ICS accommodates both small- and large-scale fires through modular organization. The specific organizational structure established for any given incident will be based on the management needs of the incident. The ICS is described in the Fireline Handbook, National Wildfire Coordinating Group Handbook 3 (PMS 410-1, NFES #0065)(1989). The general structure of the ICS is depicted in Figure 1.

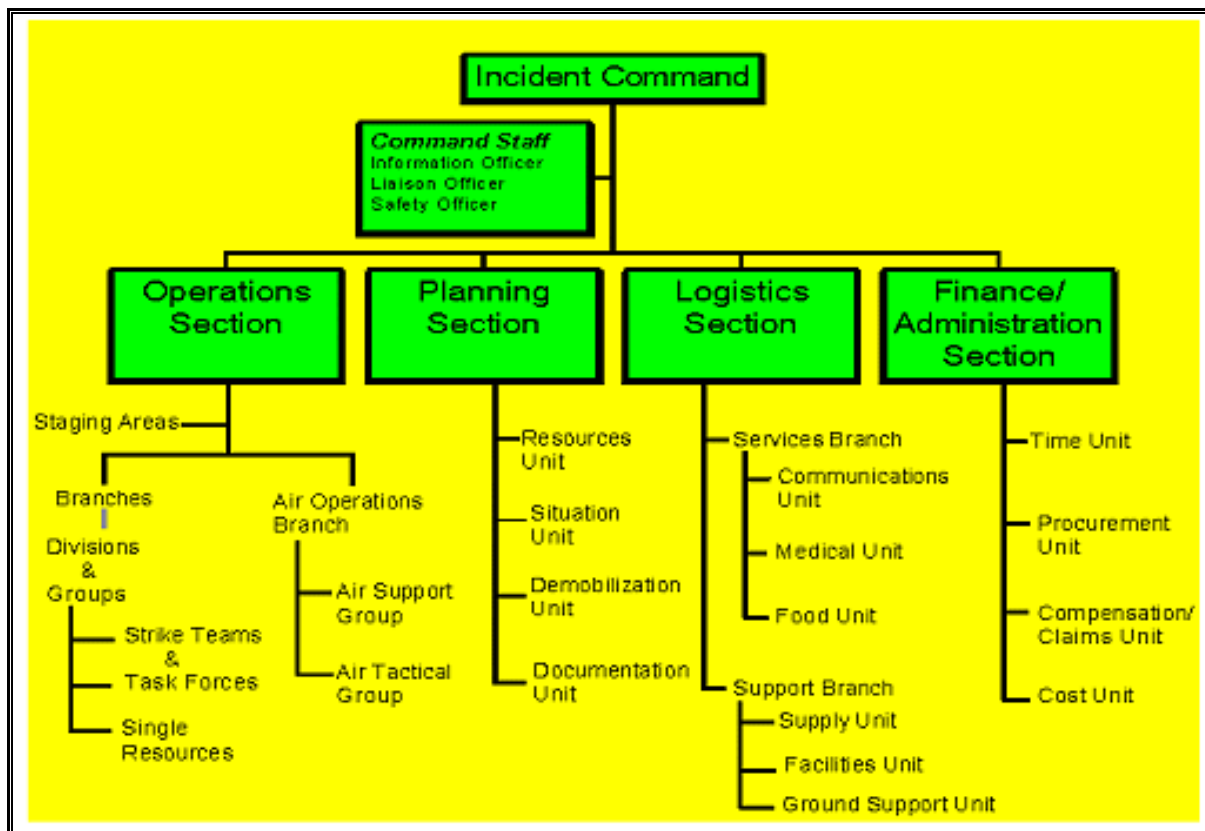


Figure 1. The Incident Command Structure.

A brief description of the ICS is offered on the following web pages:

<http://www.nysemo.state.ny.us/ICS/explain.htm#Need>
<http://oep.osophs.dhhs.gov/dmat/resource/ICS/>
<http://www.acadia.net/mdisar/icsgloss.html>
<http://www.newmex.com/~simpson/taoscentral/ics.html>

Organizational responses to wildland fires are classified according to the stage and severity of fires, described in Section 2.2 (below).

2.2 INITIAL ATTACK (TYPE IV INCIDENT)

Initial attacks are the first suppression work on a fire. All wildland fires that are controlled by suppression undergo initial attack. Initial attack involves generally involves relatively few resources because either the fire is small at first, or it takes time to assess and mobilize for an extended attack. Small fires may be suppressed completely by an initial attack. Initial attack does not involve the establishment of sections. Due to the need for rapid response, CRSs may or may not be notified during an initial attack, and the potential for damage to cultural resources can be substantial, since there is little time for their protection.

Some federal agency units have developed internal procedures for the early notification of the CRS, even during Initial Attack. Fire Management Plans might have operational procedures for initial attack, including call lists. For example, notification may be initiated by Dispatch, based on information they receive regarding the location, nature of the fire, and suppression activities that are initiated. Agency units may have action plans that identify geographic areas in which certain circumstances prompt notification of the CRS, or invoke specific protective actions.

CRSs that become aware of an initial attack should be ready to assist in cultural resource protection planning through appropriate organizational channels but must not interfere with the suppression effort. If information regarding the location and direction of the fire is available, the CRS should examine existing inventory data and be prepared with maps and site information to offer assistance. If a Planning Section Chief has been assigned or mobilized, that individual is appropriate to convey cultural resource information and recommendations for protection. Dispatch should have information regarding the appropriate person(s) to contact.

Although Initial Attack could have a high potential for impacts to individual cultural resources, rapid suppression may prevent damage to many more resources that would be damaged in a large fire. Therefore, it is important that the CRS not interfere with successful Initial Attacks, and by all means, it is critical that CRSs not take any actions without coordinating and obtaining approval for their actions through the ICS.

2.3 EXTENDED ATTACK (TYPE III INCIDENT)

An Extended Attack is a wildfire that has not been contained or controlled by the Initial Attack

and additional firefighting resources are needed. Extended Attacks are typically less than 100 acres in size, although they may be significantly larger in rural/wildland areas where values at risk are low and fuels are primarily 100 hours or less. The incident is expected to be contained or controlled within the first operational period. While some section positions may be filled, such as Planning and Logistics, branch and divisions often are not staffed. The Planning Section Chief may call the agency units CRS and solicit information on resource concerns, but such contact is by no means assured or mandated. The CRS should obtain information regarding the location, nature and direction of the fire and examine existing cultural resource inventory data. The CRS should prepare location maps and notify the Planning Section Chief of his/her availability to assist in identifying cultural resource locations for protection or consideration. The Planning Section Chief has a wide range of responsibilities during the Extended Attack and may have little or no assistance. Cultural resource information may be low on their list of priorities, and this may be appropriate, depending on the severity of the fire and threat to life and safety. As with the Initial Attack, the CRS shall not interfere or impede fire suppression efforts.

Yosemite National Park has developed draft Standard Operating Procedures for "Small Incident Fires" that roughly correspond to the Initial and Extended Attack (Type III and IV Incidents) as follows:

Yearly, a resource advisor and line archeologist call out list will be assembled and forwarded to Fire Management and Dispatch. Local park archeologist will cover at least the first 48 hours of operations and make recommendations for treatment if historic properties are threatened by wildfire and constrain suppression activity placement of camp, spike camps, helispots, safety zones, dozerlines, or handlines.

Criteria for monitoring small incidents

- 1) Site impacted by initial fire.
- 2) Lack of previous survey in immediate area of the wildfire
- 3) High potential that site(s) will be impacted by the fire.
- 4) Lack of previous survey in the maximum manageable area (MMA) and/or in the area of predicted spread.
- 5) Previously recorded site(s) and/or potential for unrecorded site(s) being impacted in MMA and/or in the area of predicted spread.
- 7) Probability that the fire will increase to mid or large size incident and ground disturbance will take place during the fire (i.e. handlines, spike camps helispots etc.).
- 8) Knowledge of the fuel loads within the MMA potentially obscuring site visibility.

2.4 LARGE FIRES (TYPES I AND II)

Large fires are those that cannot be contained within the first operational period and are characterized by a number of situations, including an inability of the Extended Attack organization to control/contain the fire, increasingly complex logistics, and the need to prepare

an Incident Action Plan. Two types of large fires are recognized, based on severity. Type I is the most severe type of fire.

The change from Extended Attack to a Type II incident response involves a transition to a Type II Incident Management Team which is brought in to replace or take charge of the suppression effort. A Type II incident is the first level at which most or all of the Command and General Staff positions are activated in the ICS. At this level, all four sections and various subunits should be established. Cultural resource consideration during fire suppression should occur under the Planning Section. CRSs serve as Technical Specialists during fire suppression. The term *Resource Advisor* is sometimes used to refer to specialists providing technical assistance during fire suppression, but *Resource Advisor* also refers to advisors that for some ICS teams that report directly to the Incident Commander, as described in Section 2.6.

Wildland Fire Situation Analysis (WFSA) is a decision making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives. WFSA provides an analytical method for evaluating alternative suppression strategies that are defined by different goals and objectives, suppression costs, and impacts on the land management base. A WFSA alternative describes a suppression strategy consistent with the “delegation of authority,” (a set of instructions) communicated from a land unit administrator to an incoming incident commander. The “delegation” identifies what is important to protect, and may also establish cost targets. The outcome is a description of the preferred management strategies, the operational parameters associated with those strategies, and the human and other resources necessary to carry out the strategies, including and natural and cultural resource staffing.

A WFSA must be completed when:

1. Wildfire escapes initial action or is expected to exceed initial action.
2. A wildfire being managed for resource benefits exceeds prescription parameters in the fire management plan.
3. A prescribed fire exceeds its prescription and is declared a wildfire.

WFSA suppression alternatives are selected by the responsible line officer. The line officer ensures that an appropriate level Incident Management Team is assigned, based upon WFSA analysis of complexity. USDA Forest Service Wildland Fire Management Policy, FSM-5131.1 sets forth USFS requirements for WFSA

The evaluation of decision alternatives in WFSA is a complex process based on the principle of “expected value.” Outcomes are weighted by their probability of occurrence and are added to produce an overall score on which the various alternatives leading to those outcomes can be compared.

While there are a large number of fires each year, very few require that a WFSA be done. Estimates of WFSA fire frequency suggest that less than 1% of all fires require a WFSA. WFSA process draws upon a broad diversity of land and fire management expertise, including

CRSs. Preparation of a WFSA should be a team effort that calls upon the breadth of the units land and fire management expertise. WFSA is an opportunity for CRSs to recommend the activities and resources needed to manage cultural resources during subsequent fire suppression. The WFSA process balances a wide range of considerations, so cultural resource protection recommendations may be modified or even rejected in favor of what the line officer deems as higher priorities. However, the WFSA provides cultural resources input that otherwise may be lacking of ad hoc. The orientation of WFSA reflects its intended linkages to the land management and fire management planning processes, both of which provide overarching direction concerning land management goals and objectives. WFSA is, in principle, a direct extension of these planning frameworks to an emergency incident.

WFSA is an evolving process, and extensive and detailed discussion of WFSA procedures would quickly become outdated. The interested reader is referred to the following web pages for additional information.

<http://www.fs.fed.us/fire/wfsa/WFSAMacGregortextNAPA10-22-02.doc>

<http://www.fs.fed.us/fire/wfsa/WFSa.doc>

the above web page contains a Word document that is a blank WFSA report form

<http://www.fs.fed.us/fire/wfsa/>

(the above is a link that allows you to download the WFSA software)

2.5 PLANNING SECTION

The Planning Section is responsible for the collection, evaluation and dissemination of tactical information about the incident. The Section maintains information on the current and forecast situation, and on the status of resources assigned to the incident. The Section is also responsible for the preparation of Incident Action Plans. In addition to four primary units (Resources, Situation Analysis, Documentation, and Demobilization), the Planning Section may have a number of technical specialists that serve as Resource Advisors.

2.6 RESOURCE ADVISOR

The position of Wildland Fire Resource Advisor has been established for some agencies in recent years due to the impacts of fire on natural and cultural resources. The Wildland Fire Resource Advisor (Resource Advisor) provides input in the fire presuppression planning effort, development of wildland fire suppression tactics and the identification of emergency fire rehabilitation needs. The position may be filled by a person from the fire management organization, since an intimate understanding of fire management and suppression is critical to the job, although this is by no means a requirement. An understanding of natural and cultural resource needs is also essential to performing the task. Therefore, it is possible that a Technical Specialist, including a CRS, may be selected for the Resource Advisor position if that person understands the fire organization sufficiently, with the understanding that he/she would be

serving both natural and cultural resource interests. The National Park Service has issued *Wildland Fire Resource Advisors Task Book* (1992), which describes the organizational structure, duties and responsibilities for the Resource Advisor within that organization.

The position of Resource Advisor is not described in NWCG 310-1, Fire Qualifications Handbook, and the nature of the position, if it is established at all for individual incidents, will vary both between and within agencies. Some agencies may consider Resource Advisors to be equivalent in organization and duties to Technical Specialists. For the purposes of this document, a distinction is made between those two positions and adheres to the position description provided by the National Park Service.

The Resource Advisor reports to the Incident Commander and provides guidance for natural/cultural resource protection from suppression operations. He/she provides the leadership required for the development of both short and long term rehabilitation plans. The Resource Advisor also provides daily input to the IC and Planning Section Chief in the development of fire suppression strategy and tactics to minimize the expected impacts of fire and fire suppression actions upon natural and cultural resources. The Resource Advisor's duties relevant to the consideration of cultural resources are as follows:

- provide analysis, information and advice to fire overhead personnel regarding prehistoric and historic archaeological sites, historic structures, features, documented cultural landscapes, traditional cultural properties, and cultural sites important to Native Americans;
- gather data from other firefighting personnel assigned to the fire;
- determine environmental restrictions within the fire area and provide input regarding appropriate suppression actions and placement of dozer lines, wet lines, hand lines, retardant use, and other environmental guidelines commensurate with resource protection.
- document potential and actual suppression and fire-related resource impacts and the rationale for protection of priority areas;
- assist the planning function in developing fire maps and identifying areas of concern;
- provide recommendations to fire management personnel and line officers for fire suppression rehabilitation needs;
- participate in fire planning, strategy meetings, and the development of the Incident Action Plan. Presents information at shift briefings on resources of concern;
- provide resource information to local Initial Attack Incident Commanders, Dispatchers, or other fire personnel during pre-season training and planning meetings;
- brief local line officers, staff and Fire Information Officer as necessary during the incident;

- identify to line officers the need for a Burned Area Emergency Stabilization and Rehabilitation team and may become a participant of team leader;
- establish a procedure for long term oversight, documentation and evaluation of rehabilitation efforts; document long-term successes and failures; and
- ensure that appropriate staff and methods are available to execute actions to meet requirements of historic preservation, cultural resource protection, and conservation of certain natural resources described in federal regulations and other authorities.

2.7 CULTURAL RESOURCE TECHNICAL SPECIALIST

Regardless of whether the ICS for a particular incident has a Resource Advisor or vests the aforementioned planning and communication responsibilities with the Planning Section Chief, unit leader or other organizational arrangement, information on the location, nature and importance of known cultural resources are provided by a cultural resource specialist (CRS) that serves as a Technical Specialist in the ICS (CR Technical Specialist).

2.7.1 Organizational Placement

Technical Specialists may be used in a variety of capacities, and their organizational placement may vary according to agency unit and need. Under the formal ICS structure they are depicted within the Planning Section (Figure A5-1) and they may report directly to the Planning Section Chief. Depending on the size and complexity of the fire, Technical Specialists may be organized as a separate unit or subsumed within one of the four primary units. Generally, if expertise is needed for only a short time and involves only one or two persons, they may be assigned to the Situation Unit. If the expertise will be required on a long-range basis and requires several persons, a separate unit may be established within the Planning Section. It is also possible that Technical Specialists could be reassigned to other parts of the ICS. If a Resource Advisor is established, Technical Specialists may also report directly to that person. A request for a CR Technical Specialist can also be initiated from other ICS staff, such as the Planning Section Chief.

2.7.2 Cultural Resource Technical Specialist Qualifications

CRSs serving as Technical Specialists shall be qualified professionals. The *Secretary of the Interiors Professional Qualification Standards for Archeology and Historic Preservation* serve as the baseline qualification for considering assignment as a Technical Specialist. The collection and compilation of information can be performed by persons that do not meet these standards, but recommendations to the Resource Advisor, Planning Section Chief, or other authority within the IC regarding the significance of resources the sensitivity of areas to contain cultural resources, or recommendations for the protection or treatment of cultural resources must be made by a qualified CRS.

Before assignment as a CR Technical Specialist, it is important to identify the duties and requirements that they are expected to perform. If a CRS will be on the fireline before the fire is controlled or contained, the CRS must be qualified to be in such locations. In order to serve as a Technical Specialist for cultural resources or archeology on the fireline, the CRS must

successfully complete fire courses S130/190 and pass a physical test outlined in NWCG 310-1 *Wildfire Qualifications Subsystem Guide*. Technical Specialists who perform office work and advise the Resource Advisor or Planning Section Chief but do not need to be on the fireline do not need to be red card qualified to serve as a Technical Advisors.

Training Recommendations. CR Technical Specialists should have a basic understanding of fire management. One way to accomplish this is to take basic fire courses such as the two courses offered as a 40 hour training session (S130/190). Fire management program staff should be able to advise CR Technical Specialists regarding the appropriate courses for a basic understanding of fire suppression and the ICS. The National Interagency Fire Center maintains a web page that lists national and regional fire training at <http://www.fire.nps.gov/firetraining/> and <http://www.fire.nps.gov/mats/matsframe.asp>. In order to maintain red card certification as a CR Technical Specialist it is also necessary to attend 8-hour refresher training every year.

If the physical fitness test is not included in the basic fire fighter training, CR Technical Specialists can arrange to do the “pack test”. This test involves carrying a 45-lb. pack three miles, in 45 minutes for an “arduous” rating; there are adjustments for elevation. CR Technical Specialists can obtain a “moderate” rating by carrying a 25-lb. pack for two miles within 30 minutes; however, the CRS might be restricted to fire camp, or allowed on the line only with an escort. An “arduous” rating affords maximum autonomy of service and ensures that the CR Technical Specialist has the physical ability to get out of trouble quickly.

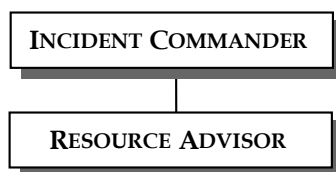
2.7.3 Duties and Responsibilities

The Technical Specialist is tasked with collecting and analyzing cultural resources information, and making recommendations to the Resource Advisor or Planning Section Chief. The CR Technical Specialist is part of a fire suppression team, and the highest priority of the team is the protection of human life. The protection of cultural resources is a second priority that must not interfere with the first. It is imperative that the CR Technical Specialist work with and through the ICS. With this caveat, the CR Technical Specialist has a number of tasks and responsibilities:

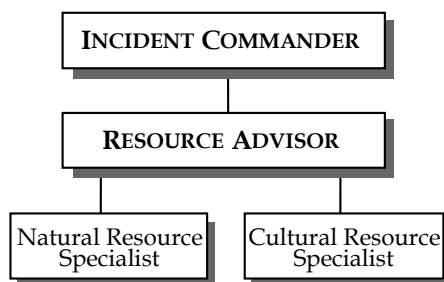
- coordinate with the local or home unit cultural resource specialist;
- identify local cultural resource concerns and protection priorities;
- learn the locations of known cultural resources within the burn area;
- become acquainted with the types of cultural resources within the burn area;
- prioritize survey work, as necessary
- identify cultural resources that may be affected by ground-disturbing suppression activities, if possible;
- develop/recommend cultural resource avoidance or protection measures for cultural resources at risk;
- develop strategies and recommendations for protection of critical/important cultural resources in projected burn areas;
- identify cultural resources damaged during suppression;
- recommend measures to protect cultural resources from additional suppression damage
- ensure that cultural resources are not further damaged during demobilization
- document cultural resource activities and issues;
 - map site locations
 - complete site forms for newly identified and damaged resources
 - identify areas surveyed
 - rehabilitation recommendations beyond suppression
- provide recommendations and facilitate a smooth transition to the ESR team; and
- ensure that local or home unit CRS has documentation and necessary information; regarding cultural resource locations, damages, applied treatment/protective measures, and recommendations for further protection.

Attachment XX discusses some of the duties and responsibilities of a CR Technical Specialist.

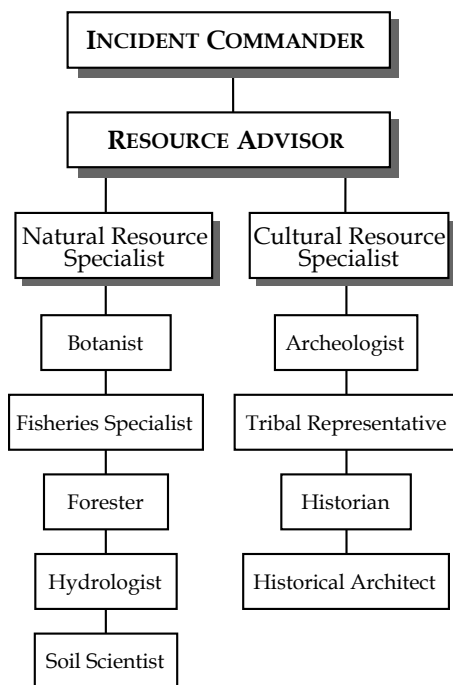
SIMPLE SCENARIO



MODERATELY COMPLEX SCENARIO



HIGHLY COMPLEX SCENARIO



The positions listed in the figure above may have additional subordinate field personnel to accompany fire crews in sensitive areas or gather information for planning purposes.

3.0 PROCEDURES

Following are considerations for planning and conducting cultural resources activities during wildland fire suppression. Fire- or agency-specific procedures are likely to vary with circumstances and needs.

3.1 PRE-FIRE PLANNING

3.1.1 Fire Suppression Personnel Training/Education

Fire crews are the first responders to wildland fires, so they will be first to have opportunities to protect or avoid important cultural resources, with the caveat that cultural resource protection is not their primary responsibility. However, if fire crews are acquainted with the types of cultural resources present within the fire area they will be in a better position to take advantage of opportunities and assist in cultural resource protection by notifying their superiors of discoveries, or at least minimizing damage when fire suppression activities on and surrounding cultural resources are unavoidable. Fire crews may be mobilized before CRSs are notified and able to assist in resource protection.

Fire suppression is an inappropriate time to train or educate fire crews regarding the nature of cultural resources. However, such training can be accomplished prior to the fire season. Agency units should, as part of the Cultural Resource Element of their Fire Management Plan or agency training programs, conduct or sponsor cultural resource training sessions for local fire program staff. The training program need not be lengthy and might be added to existing training programs, but they should familiarize the fire staff with the range and nature of cultural resources that may be encountered during fires. Training may incorporate photographs, videos, slide shows, physical examples of cultural materials such as archaeological artifacts, and field trips to examine cultural resources that may be difficult to describe or convey in a classroom setting, such as prehistoric archaeological flaked stone scatters and middens.

Training should also include actions to be taken when cultural resources are discovered (e.g., redirecting work, modifying suppression techniques) and individuals to be notified. Training should be developed by a qualified CRS familiar with the agency unit. The CRS should work with fire management staff to develop a training curriculum that is appropriate to the unit.

Training recommendations for CRSs working as Technical Specialists on wildland fire suppression teams is discussed in Section 2.7.2 of this Workbook.

3.1.2 Call Lists and CRS Notification

Each agency unit participating should develop a “call list” of CRSs and qualified CR Technical Specialists to be notified upon the outbreak of a fire. Such call lists may reside with fire program staff and/or Dispatch. The Incident Commander is responsible for decisions regarding personnel on a fire, and CR Technical Specialists may be specified in WFSAs documents. The Incident Commander may, for reasons of safety or emergency, decide against the immediate presence of a CRS or Technical Specialist. However, notification of the CRS and/or potential CR Technical Specialist will provide an opportunity to initiate planning activities to assist in cultural resource protection if and when those individuals are called to service. Notification also

provides the CRS an opportunity to convey sensitive cultural resource locations and recommendations for protection to the Incident Commander, Resource Advisor, or other ICS staff that may be able to ensure cultural resource protection.

Upon notification, the CRS should gather as much information as possible regarding known resources and their locations within the wildfire area. This is also a good time to notify the SHPO/THPO and Indian Tribes of the incident and solicit information from those sources regarding important resources and recommendations for resource protection.

Some agency units file fire response maps with the Fire Program or even Dispatch. Such maps can alert the Incident Command of sensitive resources that should be protected if possible..

3.2 CONSULTATION

3.2.1 SHPO/THPO

In developing fire suppression response procedures, each agency unit should establish procedures for notifying and consulting SHPOs/THPOs appropriate to the lands within which wildfires are burning. These SHPOs/THPOs should be notified of emergency fire suppression activities involving federal agencies as soon as possible after the outbreak of the incident. While the line officer, IC, Resource Advisor, or Planning Section Chief may make contact, fire personnel are quite busy during initial attacks and mobilization for more extended attacks. SHPO/THPO contacts may be included in call lists, which may be the best means of ensuring that they are contacted. If fire personnel do not make contact, however, the CRS should contact the appropriate SHPOs/THPOs as soon as possible. The CRS for the agency unit is most familiar with the nature of cultural resources and procedures for their protection, and it is logical that this individual notify the SHPO. It may be advantageous to obtain a basic understanding of the fire situation prior to making contact. Notification may take a variety of forms including letter, telephone call, fax, email, or personal visit. The form of communication should be appropriate to the nature and urgency of the circumstances. The SHPO/THPO should be informed of the measures that the agency is taking to consider and protect cultural resources during fire suppression. This includes anticipated levels of mobilization, organization, staffing, and plans for CR Technical Specialist involvement. Such information may not be immediately available, so the SHPO/THPO may be first notified of the fire, then consulted during and after plan development. The SHPO/THPO may make recommendations regarding the protection of cultural resources that the agency should take into account in conducting fire suppression activities.

3.2.2 Notification of and Consultation with Indian Tribes

Indian tribes appropriate to the area of the wildfire incident should also be notified as soon as possible after the outbreak of the wildfire incident. In addition to the CRS, the line officer, IC, Resource Advisor, or Planning Section Chief may make contact. Indian tribes may value particular cultural and natural resources within the wildfire area and be able to identify the locations of those resources in order to afford them protection during fire suppression actions. Native Americans also may have valuable knowledge of the landscape and be able to offer information regarding sources of water, terrain, the location of trails and access roads, and fuel load conditions. Laws such as the Archaeological Resources Protection Act and the Native

American Graves Protection and Repatriation Act (NAGPRA) are not waived during fire suppression activities. Notification and consultation may help to facilitate compliance with these laws if fire suppression activities involve certain circumstances (e.g., excavation in archaeological sites on federal lands or the discovery of human remains or cultural items).

Native Americans might serve as Technical Specialists when a wildfire burns on Indian lands or when they meet the qualifications of a Technical Specialist on federal lands. Agency representatives should contact the Tribal representative to determine if a Native American Advisor or Technical Specialist is available, and those individuals might be included on agency call lists. As with other Technical Specialists, Native American advisors must pass a physical test outlined in NWCG 310-1 "Wildfire Qualifications Subsystem Guide" to work on the fire line.

The agency should take into account the concerns of the Indian Tribes and make a reasonable effort to avoid or protect cultural resources of value to the Tribes.

3.3 MOBILIZATION

The first activity of a CRS or CR Technical Specialist called to a fire is to report directly to status check in. This registers the individual in the ICS and places them on the board of resources committed to the fire. This is also where the CRS/CR Technical Specialist must determine their place in the ICS and to whom they report (Planning Section Chief, Resource Advisor, etc.).

If the CRS/CR Technical Specialist is from the home unit or local to the fire, then existing inventory information may already be collected and in hand. If not, the incoming CRS/CR Technical Specialist should contact the local CRS and obtain such mapped information if at all possible, and as rapidly as possible.

Once integrated into the ICS, the CRS/CR Technical Specialist will be involved in briefings and become aware of fire suppression plans, if not providing input to the development of the Incident Action Plan. It is in these early stages of planning and suppression that there is a significant potential to protect cultural resources by informing the IC of conflicts between the proposed locations of fire suppression facilities (e.g., fire camps, helispots) and cultural resources. Avoidance of such locations may not always be possible if there are no suitable alternative locations, but damage to these locations may be minimized if the conflict is identified and facilities are prudently put into place with the assistance of the CRS/CR Technical Specialist.

It is necessary to establish priorities when developing and implementing an Incident Action Plan or a cultural resource plan for the fire, realizing that it may be impossible to perform all of the tasks and consultations that are conducted in non-emergency undertakings. Immediate protective actions may need to be taken to prevent cultural resource destruction, and there may be no time for any consultation with SHPOs/THPOs or Indian tribes, even when those protective actions may damage portions or contributing characteristics of the resource. Professional judgment is often necessary in making such decisions. These needs are recognized by the inclusion and nature of procedures for emergency situations described at 36 CFR 800.12.

The following sections of this Workbook describe situations and suggested approaches to cultural resource inventory, evaluation, and management in the context of wildland fire suppression.

3.4 PROTECTING KNOWN RESOURCES

Many agency units have comprehensive, or at least extensive inventory, and many have identified cultural resources with high cultural values. Often, the values of those resources are recognized through inclusion or determinations of eligibility on the National Register of Historic Places, but there are thousands of properties on federal lands that are recognized as important to the agency or the public, but have not been formally evaluated. The protection of these known important resources should be a high priority, when protection is possible without endangering life, property, or the efficacy of the fire suppression effort. Such protection should occur within the context of the ICS. CRSs that attempt to access cultural resources in order to protect them without working through the ICS may endanger themselves as well as others. There may be opportunities for cultural resources protection in advance of the fire if the WFSA or IC daily situation analysis indicates that it is safe to travel to the resource, and there is sufficient time to implement protective measures without exposure to danger from the advancing fire, or without hindering suppression activities. A Cultural Resource Element of the agency units Fire Management Plan should identify important resources that are sensitive to fire damage and, to the extent feasible, describe potential protection strategies.

There are many standard protective measures that can be applied to cultural resources. Each is suited to particular circumstances. A variety of standard treatment measures are presented in Attachment 2 of this Workbook.

3.5 INVENTORY

Cultural resource inventory during fire suppression often must be conducted according to priorities that are established first by the ICS with primary consideration to fire suppression and the protection of life. The highest priority is to search for resources that may be subject to the most immediate threat of damage, which are typically those areas that will be subject to ground disturbance. Locations of potential ground disturbance include fire camps and staging areas, helispots, new access roads, roads that need widening, and fire breaks created by bulldozers and hand lines. High priority should be placed on conducting field surveys before these facilities are constructed, and if that is not possible, as soon after they are established as possible. Even when such facilities have been constructed, ongoing resource damage may occur from their continued use, and demobilization activities may further damage cultural resources at such locations. Therefore, immediate post-construction survey may allow the agency to prevent or minimize further resource damage.

Each state and agency have their own standards for recording cultural resources, and some of those standards involve lengthy forms that call for detailed resource descriptions. The urgency and limited time available for inventory during fire suppression may preclude the completion of such forms. In fact, the time that it takes to fully record a cultural resource may be time taken

from identifying and protecting other resources. Under such circumstances, cultural resource information should be limited to accurate location, dimensions to the degree feasible, and a description sufficient to relocate and identify the potentially important characteristics of the resource. Some states have developed summary recording forms (e.g., primary records) that accommodate this basic level of recording. More detailed records may be prepared after the fire has been controlled or extinguished, as an aspect of damage assessment or monitoring. Recording standards and their sequence should be negotiated with the appropriate SHPO/THPO and described in the Cultural Resource Element of the agency units Fire Management Plan.

3.5 CULTURAL RESOURCE EVALUATION

The application of the National Register of Historic Places (NRHP) criteria is the mechanism for resource evaluation that federal agencies must use prior to taking actions that may affect historic properties. Implementing regulations for Section 106 of the National Historic Preservation Act mandate the NRHP evaluation of cultural resources to identify their important characteristics so that the effects of the undertaking and appropriate treatment measures can be determined and negotiated for those resources determined to be NRHP eligible. Many fire suppression actions have the potential to affect historic properties and are considered undertakings. In addition, while cultural resource protection measures may be well-intended, many of these measures are nonetheless federal actions that have the potential to affect characteristics of historic properties.

The process of cultural resources evaluation, as followed under 36 CFR 800, can include fieldwork, analysis, reporting and SHPO/THPO consultation. This process can take months, and there is no such time during fire suppression. Management decisions or historic preservation priorities often must be made immediately in order to protect important resources. This includes decisions regarding which resources should and will be protected, as well as decisions regarding the type of protective measures that can be practically and effectively applied. Agency units often address the evaluation issue during fire suppression by assuming that resources are eligible and treating them as such for the purposes of the fire suppression undertaking. Agency units should plan for fire suppression by developing expedited evaluation procedures as part of the plan that agencies are encouraged to develop for taking historic properties into account during operations which respond to emergencies pursuant to 36 CFR 800.12(a). Expedited evaluation procedures may also be developed and negotiated with the appropriate SHPOs/THPOs as part of the Cultural Resource Element of the agency units Fire Management Plan. In addition to assuming and treating cultural resources as eligible, plans may include identifying resource types or classes that will be considered NRHP eligible or ineligible for the purpose of fire suppression. Certain conditions, such as types and levels of physical integrity, may be established for each type. Defining the types and necessary conditions in a planning document allows resources to be categorically and rapidly determined and treated as eligible during fire suppression undertakings. The nature of consultation with Indian tribes, when resources of cultural value to them

3.6 PROTECTION MEASURES

Avoidance of cultural resources or historic properties is the safest measure to ensure resource

protection, but there are many circumstances that preclude total avoidance. There may be no time or staff availability to implement the most desirable protection measures. The CRS responsible for making decisions regarding resource protection must often establish priorities, which may mean choosing the cultural resources for which protection measures will be applied while accepting damage or even destruction of other resources. Circumstances may also warrant the application of measures that may lessen the severity of fire effects but not eliminate them entirely.

There may be opportunities, on fires that burn for an extended time (more than one operational period) , to protect known resources in areas that are predicted to burn. Fire behavior modeling may identify the amount of time that is available to implement protective measures before a fire reaches certain areas. The CRS Technical Specialist **MUST** work with and through the ICS in making recommendations for resource protection and obtaining approval to implement such measures.

Many protection measures are common to fire management actions other than suppression, including fuels management and emergency stabilization and recovery (ESR/BAER). A list of treatment measures is offered in Attachment XX. Specific implementation procedures may exist for some of these measures, and agency units are encouraged to tailor the implementing procedures to meet their individual needs. The list of treatment measures in Attachment XX is by no means exhaustive. Some of these measures (e.g., hand lines surrounding resources) are designed to provide complete, short-term protection of cultural resources (e.g., avoidance). There are many circumstances where total avoidance is necessary and appropriate. However, total avoidance may have consequences such as the creation of “islands of unburned vegetation that signals unauthorized artifact collecting or vandalism. Additionally, avoidance may do little more than defer a wildland fire that eventually damages or destroys the resource.

Another form of resource protection is the use of Minimum Impact Suppression Tactics (MIST), which are now a widely accepted part of the fire suppression effort in North America. MIST recognizes the importance of protecting life and property, but strives to do so while conserving resource values. Put simply, MIST is a “do the least damage” philosophy. Resources to be protected may be varied, including wildlife, watershed, forest products, livestock, fences, remnant native vegetation, or cultural resources. MIST **does not** compromise firefighter safety, or the effectiveness of the suppression effort, which might put other assets at risk. However, MIST **does** aim to use suppression tactics that will have minimal long term impact, while achieving a satisfactory fire suppression outcome. MIST guidelines are offered in Attachment XX.

3.7 TRANSITION TO ESR/BAER

At some point in fire suppression operations the fire is brought under control and the ICS begins the process of mopping up, damage control, and damage assessment – transitioning to Emergency Stabilization and Rehabilitation (ESR). During the transition period, the distinction between suppression and ESR is one of funding source rather than function. It is appropriate to use fire overhead and suppression forces, which are tied to the incident primarily for suppression purposes (i.e., mop up, line patrol, short-term rehabilitation), to help with long-

term rehabilitation treatments (seeding, building check dams, etc). However, ESR activities are distinguished from Fire Suppression Activity Damage Rehabilitation, which are the actions taken by the suppression incident organization as soon as possible prior to demobilization to rehabilitate lands damaged by suppression activities. Efforts to assess damage, prevent further damage, or rehabilitate cultural resources damaged by fire suppression activities are initiated by the suppression incident organization and are funded by Wildland Fire Operations, Suppression Operations subactivity. Wildland fire suppression damage stabilization and rehabilitation activities for cultural resources are not ESR activities.

Fire Suppression Activity Damage Rehabilitation and ESR planning team activities are an integral part of wildland fire incidents. Both are governed and supported by the same wildland fire incident mobilization, resource availability, training, qualifications, and incident business management procedures. Timely preparation of ESR Plans within 10 working days (multiagency fires) of control can be facilitated by proactive Fire Suppression within 10 working days (multiagency fires) of control of the fire Developing

3.8 REPORTING

There are no formal reporting requirements for cultural resource work conducted during suppression activities, although a report is critical to appropriate treatment of cultural resources after the fire is out. Information reported by the CR Technical Specialist will be used by the agency unit managers, as well as by the ESR/BAER team in subsequent weeks. The more detailed the information that the CR Technical Specialist can provide regarding inventory and protection activities, the better. Maps that depict areas surveyed, cultural resource locations, firelines and fire suppression facilities, inventoried areas, cultural resource records, however informal, and notes regarding protection measures are should receive the highest priority attention. Archaeological site records are very desirable. If there is insufficient time to produce complete site forms, the CR Technical Specialist should at least produce a short form (e.g., primary record) or whatever the agency unit has available for briefly recording site locations and descriptions. Forms that record cultural resource conditions can be valuable in documenting cultural resource conditions that may be monitored for changes during ESR/BAER assessments and rehabilitation efforts. The report prepared by the CR Technical Specialist should also render recommendations for protection or rehabilitation. It is important that recommendations be practical and realistic. Recommendations for cultural resource treatment should relate to either damage caused by fire or fire suppression, or threats posed by fire damage to the environment. Recommendations that are prohibitively expensive or which do not relate to fire effects may damage the CR Technical Specialist's credibility and are unlikely to be funded. Timeliness is essential in completing a report. The report should be submitted to the Planning Section before demobilization if at all possible, so that it is available when ESR/BAR assessments begin.

Keep in mind that the location of archaeological properties on federal lands often must be considered confidential in order to protect those resources from damage. The CR Technical Specialist should prevent dissemination of sensitive cultural resource locations to the general public or persons that do not need to know. Restricting such information may require the editing of the report to exclude information on resource locations.

ATTACHMENT 1. FIRELINE HANDBOOK FOR ARCHAEOLOGISTS

The following guidance and advice for Cultural Resource Technical Specialists assigned to wildland fire suppression was prepared by Ms. Lisa Hanson, National Park Service.

The following is a quick compilation of my thoughts on what a Cultural Resource Technical Specialist should do on a wildfire assignment. Although I've included a few comments pertaining to local, smaller fires, this document is intended for use on project fires.

The position of Resource Advisor is NOT included in the NWCG 310-1 (Fire Qualification Handbook), which means that each agency has a slightly different expectation for this position. To the best of my knowledge, the NPS has no current handbook for this position, and the outdated handbook (~10 yrs old) did not address cultural resources.

Keep in mind, that to have Cultural Resource Technical Specialist, or Archeologist listed on your red card, you need only have successfully completed S130/190, passed the physical test, *and* convince your approving officer (who signs your card) that you can perform in this function. Since the approving officers (usually local FMOs) have no standards to apply in judging an individual's professional qualifications, this is potentially an arbitrary decision on their part.

The following guidance offers little content regarding survey, site recording, etc; I consider this professional knowledge that you should bring with you to a fire from your day job. This document focuses on the points of intersection between the CR manager and the fire organization.

1. Get Ready. The first step toward working as a Cultural Resource Technical Specialist on a wildfire assignment is to take the basic fire courses. Usually these are offered together in a 40 hour training session (S130/190). Check with your nearest fire program assistant for information on where this will be held; if you don't have a fire program assistant, talk to the person charged with initial attack responsibilities on your unit. Chances are that this training will be hosted at a location near you every year. You are also required to attend 8-hour refresher training every year. Refreshers are typically hosted in many locations (probably even locally).

If the physical fitness test is not included in the basic fire fighter training, or if you are past the initial training, and now doing refreshers, make arrangements with your fire program assistant to do the pack test. This test involves carrying a 45-lb. pack three miles, in 45 minutes for an arduous rating; there are adjustments for elevation. This rating gives you the fewest restrictions on a fire. Although you may be able to go to a fire with a moderate rating (25 lb. pack, 2 miles, 30 minutes), you might be restricted to fire camp, or only allowed on the line with an escort. The reality is that if you want to be on the line, especially working in a fairly autonomous capacity (like Cultural Resource Technical Specialist), you should have the physical ability to get yourself out of trouble fast.

2. Get Set. In order to be called to a fire, the right people have to know that you're available. Availability is governed by your personal wishes, and by those of your supervisor. Check with

your fire program assistant (or your local or regional dispatch if you don't have a program assistant) about how he/she wants to receive availability information. If you want to go on subsequent fires after your first assignment, make sure that your supervisor is on board with this; remind your supervisor frequently about your availability status, and inform her or him when you accept an assignment.

If you have a fire on your unit, invite yourself. If the fire is small and/or in the early stages, work through the local Incident Commander, otherwise, contact the Plans Section chief and or Agency Representative and pitch it to him or her. Working through the system is absolutely necessary if you hope to be invited back for the next fire; it also lends credibility to the position of Cultural Resource Technical Specialist.

Some units of both the Forest Service and the Park Service have archaeologists on their local call out lists; it gets the cultural resources folks in at the ground level. In most cases, an archaeologist can get to the fire on their unit before heavy equipment, and at the same time or shortly after the arrival of initial attack personnel.

You can be listed as "available" in three different categories: (1) local; (2) regional; or (3) national. In reality, once assigned to a fire, you can be sent anywhere. Dispatchers, home units, and the personnel in the resource order filling system are reluctant to bring on resources that are restricted in their availability. Unless there is a compelling reason to be listed only at the local or regional level, it will improve your chances of a call out to list yourself as available at the national level.

The maximum length of assignment changed in FY2000. Current guidelines call for 14-day assignments, plus travel days on both ends of the assignment.

If you are listed as "available" on the national level and know that there are fires that you *really* want to go to, and you haven't been called, make some phone calls. Look at the National Situation Report, and call those units that are burning. You may be able to connect with someone who is responsible for local cultural resources. Ask this person to name-request you through the Plans Section of the fire; if the person you talk to is not assigned to the fire, they can still have you requested by working through their Agency Representative who is assigned to the fire. You could also call the coordination centers for the areas that are burning, and let them know that you are available and interested in participating. Keep your call brief, however, since these folks are very busy.

You should have your "red bag" packed and ready (this is covered in S130/190), and when you go to a project fire as a Cultural Resource Technical Specialist, you should also have a pack with your field equipment. This will probably be very similar to the collection of equipment that you take out on survey, including compass, graph paper, pencils, ruler, camera, GPS unit, etc. The things that you should try to get from the fire are local topographic maps (and maybe orthophoto quad sheets), flagging tape (in the color designated for CR use on that fire), site record forms, and maps with known sites and the site records, and previous surveys.

3. Go! When you accept an assignment to a type II or type I wildfire, your fire program assistant or coordination center will let you know the logistical specifics. One word of advice; if

you can drive, do it. Fires always seem to be short on vehicles, and having your own ride will help you accomplish your job since you may work relatively independently. When you arrive at the fire, go directly to status check in; this gets you in the system and on the board of resources committed to this fire. Just about everyone will develop a strong dislike for your actions if you fail to check in. Also remember not to leave the fire without getting demobilization orders. This keeps you accounted for at all times.

When you check in, find out who the Plans Section Chief is. This person is your contact within the IC system. You will either be working for the Plans Section Chief or the Agency Representative (this person is assigned to represent specific concerns and conduct liaison work on behalf of the unit hosting the fire). Identify your supervisor on this assignment. If you're headed to a smaller local fire, with no team assigned, ask dispatch who your contact is on the line.

Next, find out if you are the only one assigned to do CR work on the fire. If you are on your own, and it's not your home unit, try to make contact with the local archaeologist to let them know what you're doing, and to get maps of site locations and previous survey, and site forms. This is a good time to discuss what the home unit's specific concerns are, and what the local resources include. Be sure to route these requests through your supervisor or at least ask them how you can get these items. This contact is really critical, since there is no substitute for local familiarity and knowledge of the resources.

If maps will take a while to arrive, or if you have other archaeologists working with you on the incident, look into the possibility of getting out to look at the ground. Since you've probably arrived in the middle of an operational period, you won't get the real scoop until the next briefing; but you can still get some work accomplished. If there are any new dozer lines being constructed, try to make contact with the dozer boss (who is routing/guiding the equipment on the ground), and walk with that person, surveying the route. If you can wait for maps, they'll help considerably in this process; don't ask the dozer boss to hold up line construction for archaeology (they wouldn't do it anyway, and asking really lessens your credibility). This is an emergency situation, and the overriding goal is to suppress the fire.

Walking in front of the dozer is a potentially dangerous assignment; let the dozer boss and operator know what you are trying to do. If you can route the equipment around a site, you've earned your pay. Remember that the dozer boss had the final say on what the equipment does. That person is responsible for the safety of the equipment and operator. If the dozer will have to compromise safety to avoid the site, don't ask them to do it; human resources are more important than material remains of the past.

Don't attempt to walk in front of a dozer at night, or if you feel unsafe (like direct attack or in a very smoky situation). Keep in mind, that to complete pedestrian survey, you have to be able to see the ground. A note on safety; you need to have a certain familiarity with working around heavy equipment. One way to get this familiarity is to volunteer for those ever-popular monitoring assignments during construction projects on your home unit. If more than one dozer is operating, lots of new line construction will take place, or you're finding lots of cultural resources, ask for another/more archaeologists to be assigned. The goal is to survey before initial line construction and other ground disturbance; there are many

additional opportunities to further impact a site after the initial line is cut (line improvement, mop up, and rehab), so survey as soon as you can.

After new line construction has been completed, the dozers and crews will usually be put to work improving the line (breaking up slash piles, widening the line, etc). Now is the time to get out and walk those lines, helispots, camp locations, etc. that you couldn't survey before initial impact. Do this as soon as possible. The point in doing this, is to avoid additional impact to sites that were hit during initial impacts, either from improvements, mop up, or rehab. If there are sites that have been hit, or are close to the line, flag them heavily. Be sure to use the color designated for CR use on this fire. It can't be stressed enough that between line improvement, mop up, and rehab, there are many opportunities for additional impacts to sites. After you've looked at the dozer lines, look at the hand constructed fire lines. Although the potential for damage is less on hand lines, it does exist, and the impacts should be surveyed.

Look around for other impacts from the fire suppression activities. A few examples are camp and spike locations, helipads/spots, water source (portable tanks) locations, staging areas, and areas that might contain resources particularly sensitive to smoke (like rock art). Other possible impacts are new roads or dozer lines to access the fire. All ground disturbance needs to be accounted for in the report.

At some point, you'll have to get into the "triage" mode, and prioritize the survey work that needs to be done. Always try to get to the areas that are about to be impacted first, and then to the impacts that have already occurred, realizing that there are often subsequent phases of impact (especially lines, but camp, air ops, and portable water tank locations, etc too). After a few assignments, you'll get a feel for what impacts are associated with specific activities; this will help you set priorities.

The report that you prepare is critical documentation for this incident, and it will be used by the unit managers, as well as by the ESR/BAER team. Professional judgment comes into play here; there is no set format or template for this report. It is better to include more information than less in this report (within reason). Include areas surveyed on maps, and dimensions and acres. If sites were located, identify them on a map, and include completed site forms (the reason that I include completed site forms, is that not all fires get ESR/BAER money for CR work) and site maps in the report. Identify and differentiate areas surveyed before impacts and those surveyed after impacts.

It's helpful to include suggestions for rehabilitation in this report; ideally, the ESR/BAER team will take care of this, but that transition can be drawn out, providing an opportunity for site protection to fall through the cracks. Be as specific as possible on this; for example, if they need to stay out of areas for waterbarring, but seeding is OK, write it in the report. If at all possible, meet with the ESR/BAER team to discuss your concerns and recommendations; show-me trips can cut out a considerable amount of confusion.

Finally, give copies of the report to the following: documentation unit leader, the Plans Section Chief (usually this person will only want a copy in the Doc unit), the Agency Representative, the BAR leader, and the unit archaeologist. In theory, the doc unit will provide copies to the other folks, but there could be a time delay. Finish this before you demob from the fire.

A few additional comments:

- Safety is the overriding theme on any fire. Think about everything that you do, as the consequences of a mistake are magnified to a potentially fatal level. Be mentally prepared for this assignment.
- The majority of fires are Type 5, 4, or 3 fires, which are handled at the local level. It's important to stress the need for cultural resource managers to be on those local call-out lists.
- Go to the morning briefing every day, and evening briefings when you can make it. Morning briefings are where you will hear the plans for the day; where equipment is working, crew assignments, air operations, etc. There is no substitute for being there! Resource protection is usually one of the objectives, so if there are CR concerns, ask the Plans Section chief to address them (or let you address them) at the morning briefing.
- When you get to the line, let the division supervisor of the division you'll be working on know that you're there, what you're doing, and what your schedule is. It helps to meet with the division supervisor at the am briefing; once on the line, they have a lot to juggle. The division supervisor may want you to check in with him/her on a regular basis to keep tabs on you; if things are blowing and going, you will probably want to attach yourself to another resource, like a dozer boss, or a crew.
- When you leave a division to go back to camp or to a new division, let the division supervisor(s). This will allow everyone to avoid considerable frustration when someone is looking for you. Personal accountability is critical.
- On the communication note, don't even think about walking the line without a radio. As a single resource, you must have a radio for personal safety and accountability. You can use your home unit radio on large fires, but be sure to see the communication unit folks to have it programmed for the frequencies on that particular fire. On larger incidents, you may be able to check out a radio from the communication unit. Get a copy of the communications plan (usually in the shift plan that you can get at the morning briefing), so that you know who is using what channels.
- Think about the assignment before you accept it. Are you really available (mentally and physically) to be out for 14 days? Are you generally familiar with the resource types in that geographic area? If you can't make a complete commitment, don't accept the assignment (just an aside, dispatchers really don't like to hear that you can't accept an assignment if you are listed as "available").

- When you have the general idea of what kind of resources you're dealing with, consider your ability to deal with them. If you need a CR Technical Specialist who can deal with a specific class of resources (for example, cultural landscapes), consider ordering one.
- See the big picture: keep in mind that you are part of a team, and the goal of the team is to suppress the fire in a safe manner, with the least amount of resource damage. If you see yourself as part of this team with this goal, your contributions are more likely to be valued by others on the team.
- If you are the archaeologist responsible for resources on your home unit, consider developing a briefing package as part of your pre-suppression efforts; this would be a package of info given to incoming archaeologists that identifies your concerns, and familiarizes that archaeologist with local resources.

Attachment XX. Requirements and Guidelines for Cultural Resource Technical Specialist on Wildland Fires

Following is another example of requirements and guidelines for CR Technical Specialists developed for one of the National Parks.

Pre-requisites: Successful completion of S130/190, pass the pack test at the “moderate” level, successfully meet basic requirements to qualify for a GS-193-9 (professional archaeologist) under the Secretary of the Interior Standards.

Note: must successfully complete an 8-hour fire refresher class, and successfully pass the pack test at the “moderate” level every year.

- Maximum length of assignment is 14 days, excluding travel to and from the assignment.
- Maintain a “fire ready” archeology field pack: this will contain the equipment necessary to complete your fire assignment. Equipment should include basic survey equipment: compass, GPS, pencils, rulers, graph paper, camera, etc. Maps, flagging, forms, and previous survey/site locations will be obtained from the fire and the hosting unit.
- After checking in on a fire, find the Resource Advisor (or Agency Representative), who will be your supervisor for the fire assignment. Find out if you are the only archeologist assigned.
 - If yes, try to contact the hosting units archeologist to get information on previous survey, site locations, types of sites likely to be encountered, etc. You may discuss the need to order more CR folks with your supervisor at this point
 - If no, coordinate with those CR folks already working the fire
- Try to get out in front of ground disturbing activities as soon as you have a grasp of the situation. This will quite likely be in the middle of an operational period, so take precautions concerning notifying line personnel about what youre doing (they wont officially know that you are assigned until the next briefing, at the end of the operational period).
 - Types of ground disturbance that you should seek out include (but are not limited to): new dozer line (be sure to coordinate with the dozer boss), camp set up, locations of portable water sources, hand lines, safety zones, and staging areas.
 - Use common sense here; the point of surveying is to avoid impacts to cultural resources, so you need to be able to see the ground in most cases. Dont try to survey at night, or in really smoky situations.
- When youve done all of the survey prior to ground disturbance, go back and start surveying the impacted areas that have not been surveyed. Look for lines, helispots, camp locations, etc. and survey them as soon as possible; additional impacts occur at these locations frequently, and they may cause further impacts to cultural resources.
 - Flag any disturbed sites, or sites close to impact areas heavily; use a pre-determined color of flagging designated by the overhead team to signify areas to be avoided
- Complete a report that documents areas surveyed prior and subsequent to fire and suppression impacts, sites located, and sites impacted. Include site records and maps for sites identified during this incident. There is no set format for this report; try to consult with the host units archeologist for guidance on what information they would like in addition to that listed above.
 - Its helpful to include rehab suggestions in this report; this is really the BAR/BAER/EFR teams responsibility, but your input helps. Be as specific as possible, and take BAR/BAER/EFR team members on a show-me trip if possible.

- Copies of the report go to the Documentation Unit, the Plans Section Chief, the Agency Representative, the BAR/BAER/EFR team leader, and the host units archeologist. Finish this before demobilizing from the fire.

ATTACHMENT XX. TREATMENT MEASURES

This section provides a series of treatment measures from which agencies can choose for their CRCs as standard measures for cultural resource protection. These treatment measures may also be modified or supplemented in order to meet agency or individual preferences. As such, the following list of treatment measures may be used selectively or in their entirety, as appropriate to agency unit needs and procedures

The following list of treatment measures is by no means exhaustive. Some of these measures (e.g., hand lines surrounding resources) are designed to provide complete, short-term protection of cultural resources (e.g., avoidance). There are many circumstances where total avoidance is necessary and appropriate. However, total avoidance may have consequences such as the creation of “islands of unburned vegetation that signals unauthorized artifact collecting or vandalism. Additionally, avoidance may do little more than defer a wildland fire that eventually damages or destroys the resource.

Seifkin (2001) classifies protective measures for cultural resources into two categories – exclusionary and non-exclusionary.

Exclusionary tactics involve preventing fire from burning on or in close proximity to a cultural resource through the use of some predetermined fire management action such as a fire line, sprinkler system, or intentionally burning out the perimeter of a resource. Exclusionary tactics are often employed when it is anticipated, given expected fire behavior, that the fire will burn at an intensity that exceeds the threshold above which a particular resource or resource attribute is impacted (e.g., ~100° C for obsidian hydration rinds). Other examples of exclusionary techniques that have been employed with success include fire shelters, fire retardants, hand and mechanical fuel removal, and fuel burial.

Non-exclusionary tactics make no attempt to exclude fire from a resource of interest, but instead seek to produce fire intensities below that expected to cause resource damage and/or that will not lead to future indirect effects. Common non-exclusionary approaches to resource protection include hand and mechanical fuel load reduction, burning under favorable prescriptions, and removal of vulnerable resources.

Some of the treatment measures in the following pages are designed to minimize the risk of substantial damage to resources while allowing fire or fire management activities at cultural resource locations. Treatment measures that allow some fire management activities to take place at cultural resource locations may pose greater short-term risk than total avoidance. However, facilitating certain fire management objectives such as fuels reduction may facilitate long-term preservation of cultural resources.

The use of treatment measures briefly described below should be accompanied by specific methods or parameter for their application that maximize cultural resource protection. Agencies and SHPOs/THPOs should reach agreement on how each of these treatment measures will be applied.

Flagging. Cultural resources may be flagged under a variety of circumstances. Flagging, in and of itself, is not a protective measure. The actions that are prompted by the flagging constitute the treatment. The most common use of flagging is to identify an area within which ground-disturbing activities and fire should be excluded.

Buffer Zones. Buffer zones surrounding cultural resources may be employed as a means to lessen the likelihood of inadvertent effects from fire management activities. Buffer zones may also ensure that the setting of cultural resources are preserved, although such protection may require a definitive study to determine the contributing elements of landscapes to those resources.

Redesign. Fuel management projects may be redesigned to exclude the area containing and surrounding the cultural resource(s). Redesign is obviously more appropriate to fuel reduction projects than it is for wildland fire suppression.

[Fire Lines](#) or Firebreaks. Cultural resources may be protected by creating firebreaks that eliminate and break the chain of fuels to resources. There are several types of fire lines, each with their own advantages and disadvantages. These include: natural fire lines; wet and retardant lines; scratch lines; undercut lines; hand lines; and cat lines. The advantages of one particular method over another will depend upon the type of fire management activity (e.g., fuels reduction versus fire suppression), fire behavior, and cultural resource variables.

Sprinklers. Sprinklers are used as a preventative measure. The sprinkler is attached to the building (or other cultural resource) and water from a nearby source is pumped through the system until the threat of fire is past, providing a constant shower over the property to be protected. Possible effects of using the sprinkler include water saturation and collapse, and water damage.

Foam wetting agents (suppressants) and fire retardants. [Foam wetting agents](#), such as [Silv-Ex](#) Wildfire Foam Concentrate, and other [Class A foaming agents](#), are considered fire suppressants applied either to fuels or the base of a flame. Foams may be applied to cultural resources and/or areas surrounding cultural resources to protect them from fire damage. Fire retardants are defined by Teie (1994:167) as "...a substance that, by chemical or physical action, reduces or slows combustion, thus slowing or retarding the rate of spread of the flame front. Most retardants are produced by combining water, several chemicals, and a coloring agent. The main chemical ingredient is a fertilizer."

Back Burning and Ring Firing. Back burning (i.e., purposely burning outside a main fire application) may be used to reduce fuels, thereby buffering cultural resources in order to protect them from either prescribed fires or wildland fires. Ring firing is a related method described by Teie (1994:478) as follows:

This type of firing is used when you are trying to save a valuable resource like a structure, or a historic or archeological site. This method of firing isn't anchored by the fireline. It is designed to create an unburned island.

Fire Fabric or Wraps. [Fire resistant fabric](#) may be placed over combustible cultural resources to protect them from burning. Sometimes called "cabin wrap," this a metallic material is attached to the structure with staples to create a nonflammable barrier. Potential effects of fire fabric

include inadvertent damage to the cultural resource when attaching and/or removing the wrap.

Burial. The heat effects of fire are generally minimal for even the most severe surface fires when objects are buried 10 cm or more. The burial of woody fuels or archaeological materials is best suited to spot locations, such as stumps, or well-defined features, such as outcrops, where soils can be easily and totally removed without damage to underlying deposits.

Thinning. Thinning reduces stand density by removing fuels. Thinning actions may vary between firebreaks and areas surrounding firebreaks. Pre-commercial thinning involves hand thinning of smaller diameter materials. Commercial thinning, accomplished through timber sales, involves larger materials. Small fuels can be removed from a cultural resource, either to lower the intensity of fire as it crosses the resource, or exclude fire from all or parts of a resource. This removal may involve carrying or dragging dead and downed branches away from the site or fire sensitive resources, or using rakes or leaf blowers to remove smaller debris.

Once thinning is accomplished, the slash must be treated or disposed in some way, including piling the material so it can be burned. The actual piling of the material may be accomplished by hand or machine, where equipment such as dozers and small tractors will haul the material to piles. Slash is also pushed or dragged into windrows. Some slash may be “rough-piled” or “jackpot piled” where heavier concentrations of fuel are left where they fall and are burned on site. Disposal activities should ensure that cultural resources are not situated within the disposal areas. Several additional methods of fuel disposal are listed below.

Lopping And Scattering - Thinned areas may be “lopped” to reduce fuel slash heights and then broadcast burned. Lopping consists of cutting smaller branches off the main stem so the height of the slash layer is reduced, which in turn allows for a less intense fire if the area is broadcast burned.

Crushing - Crushing involves dragging a large drum with protruding spokes or spikes over the vegetation, effectively breaking the fuel into smaller pieces. Another form of crushing uses a “brush crusher” in which a piece of equipment similar to a “weed-whacker” is attached to a tractor. The “brush crusher” is able to reduce the height of vegetation from 4 to 6 down to 6” in height. Both of these pieces of equipment are pulled or transported by either rubber tire tractors, or rubber or metal track dozers. The “brush crusher” may operate on up to a 60% slope.

Chipping - In the chipping process, slash is forced through a chipping machine, reducing the larger pieces of slash to small chips that are spread over the site to be burned at a later date, or left on site to naturally decompose.

Hydro-Ax And Agra-Ax - The Hydro-ax and Agra-ax are large cutting tools attached to a “Bobcat” type tractor (see also Low-impact Logging Equipment, below). They are used in the pinyon/juniper type, cutting trees off at the ground level. The trees are usually left to lay where they fall, assisting in soil retention.

Broadcast Burning - Broadcast burning uses fire over a designated area to consume natural or activity slash that has not been piled or windrowed. Broadcast burning may be used separately or in conjunction with mechanical methods such as thinning. Broadcast burns may be ignited by hand, by “terra-torches”, torches mounted on 4-wheelers or on a flatbed truck, or with aerial

ignition. Preparation for the burn may include line building, both by hand and machine.

Pile Burning - Pile burning disposes of hand or machine-piled slash. Piling the slash and burning during cooler, wetter, or winter conditions reduces the chance of escape and lessens the potential for damage to the remaining vegetation on site. Piles are normally ignited by hand using fuses or drip torches.

Directional Felling. Large, heavy fuels that create a fire ladder or carry crown fires can be manipulated both within and surrounding cultural resources to reduce the danger of fire damage. Experienced professional loggers can fell large trees with high precision to avoid sensitive cultural resources (e.g., historic structures, prehistoric archaeological surface features).

Helicopter Yarding or Logging. Trees may be lifted from the ground by helicopter with little ground disturbance. This yarding technique is common for roadless areas and areas with sensitive resource concerns where traditional terrestrial yarding cannot be used. Helicopter yarding usually creates a small amount of ground disturbance where the trailing end of the log is dragged vertically before lifted off the ground. This dragging typically disturbs an area no more than one square meter and disturbs the ground to depths less than 20 cm.

Full-suspension yarding. Various full-suspension yarding techniques may be applied to remove trees with little or no damage to archaeological deposits. Logging equipment such as front end loaders and skidders with steel tracks or rubber tires may be used to carefully and fully lift logs and remove them from the site. Special care and monitoring is necessary to ensure that track or tires do not disturb surface soils.

Low-impact Logging Equipment. Other types of low-impact logging equipment may also be available for use on and surrounding cultural resources. One type of machine is the feller-buncher, which uses a hydraulic arm and grapple to grab trees, cut them below the grapple, lift and suspend them directly from the stump, and rotate to gently lay the tree in stacks (bunches). There are also cut-to-length logging machines that lay down a bed of protective slash in advance of the machine, which is designed for minimum ground impact. Once again care must be exercised to ensure that the vehicle, either tracked or tired, does not disturb the ground surface when they enter or exit archaeological sites.

Over-the-Snow Logging. Fuels may be safely reduced on archaeological sites in areas that receive relatively deep snowfall by removing trees over the snow. Typically, minimum snow depths and maximum temperatures are specified to ensure that the ground surface will not be impacted by logging equipment.

Burn Prescriptions. Non-exclusionary treatment measures may involve the use and manipulation of fire or fuels to attain certain temperatures, fire residence times, or other conditions (e.g., smoke limitations). Burn prescriptions may involve scheduling considerations to ensure certain fuel or air moisture; the reduction, if not elimination, of heavy fuels; application of water or other materials to keep fire temperatures within specified parameters; or applying certain firing techniques to manipulate fire residence time. Burn prescriptions should be designed and implemented by fire management specialists.

Surface Collection. Even severe fires rarely impart extensive damage to materials that are buried more than a few inches below the ground surface. Treatment of archaeological site

surfaces may include the removal of cultural materials from the ground surface. Removal may involve mapping the location of artifacts, and could include temporarily collecting large artifacts prior to a fire and returning them once fire danger has passed. Alternatively, more extensive collection of fire-sensitive archaeological material (e.g., obsidian debitage) may be curated for future study, since returning such material to correct proveniences on site surfaces is impractical.

Scheduling. Scheduling a fire management activity during a season when certain critical cultural resources are less likely to be harmed is another potential treatment measure. For example, fuel management projects might be scheduled to avoid burning Native American plant resources during their productive periods. In other instances, fires may be scheduled to enhance Native American plant productivity.

ATTACHMENT 3

http://wildfirelessons.net/Winning%20Series/2003_520_Handbook/GB_MIST_Guidelines.doc

MINIMUM IMPACT SUPPRESSION TACTICS GUIDELINES

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CONCEPT

The concept of Minimum Impact Suppression Tactics (MIST) is to use the minimum amount of forces necessary to effectively achieve the fire management protection objectives consistent with land and resource management objectives. It implies a greater sensitivity to the impacts of suppression tactics and their long-term effects when determining how to implement an appropriate suppression response. In some cases MIST may indicate cold trailing or wet line may be more appropriate than constructed hand line. In another example, the use of an excavator may be used rather than a dozer. Individual determinations will be dependent on the specific situation and circumstances of each fire.

MIST is not intended to represent a separate or distinct classification of firefighting tactics but rather a mind set of how to suppress a wildfire while minimizing the long-term effects of the suppression action. When the term MIST is used in this document it reflects the above principle.

Suppression actions on all wildfires within Forest Service protected wilderness in the Northern Region will be those having a minimum impact on the physical resources associated with each site. In so doing, the principle of fighting fire aggressively but providing for safety first will not be compromised.

The key challenge to the line officer, fire manager and firefighter is to be able to select the wildfire suppression tactics that are appropriate given the fires probable or potential behavior. The guiding principle is always least cost plus loss while meeting land and resource management objectives. It is the second part of this statement which must be recognized more than it has in the past. Appreciation of the values associated with wilderness have been more difficult to articulate but, nevertheless, are important. As this recognition emerges, actions must be modified to accommodate a new awareness of them.

These actions, or MIST, may result in an increase in the amount of time spent watching, rather than disturbing, a dying fire to insure it does not rise again. They may also involve additional rehabilitation measures on the site that were not previously carried out.

When selecting an appropriate suppression response, firefighter safety must remain the highest concern. In addition, fire managers must be assured the planned actions will be effective and will remain effective over the expected duration of the fire.

Other guides, like the grizzly bear or salmon guides, will also have a bearing on what type of tactics are used.

GOAL

The goal of MIST is to halt or delay fire spread in order to maintain the fire within predetermined parameters while producing the least possible impact on the resource being protected. These parameters are represented by the initial attack incident commanders size-up of the situation in the case of a new start or by the escaped fire situation analysis (EFSA) in case of an escaped fire.

It is important to consider probable rehabilitation need as a part of selecting the appropriate suppression response. Tactics that reduce the need for rehab are preferred whenever feasible.

SUPPRESSION RESPONSIBILITY

As stated previously, safety is the highest priority. All action will be anchored to the standard fire orders and watch out situations. Safety will remain the responsibility of each person involved with the incident.

Initial/Extended Attack

Incident Commander – To understand and carry out an appropriate suppression response, which will best meet the land management objectives of the area at the least cost plus loss. Insure all forces used on the fire understand the plan for suppressing the fire in conjunction with MIST.

Keep in communication with responsible fire management or line officer to insure understanding and support of tactics being used on the fire. Evaluate and provide feedback as to the tactical effectiveness during and after fire incident.

Project Fire

Type 1/ Type 2 Incident Commander – To carry out instructions given by the responsible line officer both verbally and through the EFSA. Establish and nurture a close dialogue with the resource advisor assigned to the fire team. Review actions on site and evaluate for compliance with land line officer direction and effectiveness at meeting fire management protection objectives.

Responsible Line Officer – To transmit the land management objectives of the fire area to the fire team and to define specific fire management protection objectives. Periodically review for compliance.

Resource Advisor – To insure the interpretation and implementation of EFSA and other oral or written line officer direction is adequately carried out. Provide specific direction and guidelines as needed. Participate at fire team planning sessions, review incident action plans and attend daily briefings to emphasize resource concerns and managements expectations. Provide assistance in updating EFSA when necessary. Participate in incident management team debriefing and assist in evaluation of team performance related to MIST.

GUIDELINES

Following is a list of considerations for each fire situation.

Hot-Line/Ground Fuels

- Allow fire to burn to natural barriers.
- Use cold-trail, wet line or combination when appropriate.

- If constructed fireline is necessary, use only width and depth to check fire spread.
- Consider use of fireline explosives for line construction.
- Burn out and use low impact tools like swatter or gunny sack.
- Minimize bucking and cutting of trees to establish fireline; build line around logs when possible.
- Use alternative mechanized equipment such as excavators, rubber tired skidders, etc. rather than tracked vehicles. Use high pressure type sprayers on equipment prior to assigning to incident to help prevent spread of noxious weeds.
- Constantly re-check cold trailed fireline.

Hot-Line/Aerial Fuels

- Limb vegetation adjacent to fireline only as needed to prevent additional fire spread.
- During fireline construction, cut shrubs or small trees only when necessary. Make all cuts flush with the ground.
- Minimize felling of trees and snags unless they threaten the fireline or seriously endanger workers. In lieu of felling, identify hazard trees with a lookout or flagging.
- Scrape around tree bases near fireline if it is likely they will ignite.
- Use fireline explosives for felling when possible to meet the need for more natural appearing stumps.

Mopup/Ground Fuels

- Do minimal spading; restrict spading to hot areas near fireline.
- Cold-trail charred logs near fireline; do minimal tool scarring.
- Minimize bucking of logs to extinguish fire or to check for hotspots; roll the logs instead if possible.
- Return logs to original position after checking and when ground is cool.
- Refrain from making bone yards; burned and partially burned fuels that were moved should be returned to a natural arrangement.
- Consider allowing large logs to burnout. Use a lever rather than bucking to manage large logs which must be extinguished.
- Use gravity socks in stream sources and/or a combination of water blivits and fold-a-tanks to minimize impacts to streams.
- Consider using infrared detection devices along perimeter to reduce risk.
- Personnel should avoid using rehabilitated firelines as travel corridors whenever possible because of potential soil compaction and possible detrimental impacts to rehab work, i.e. water bars.

Mopup/Aerial Fuels

- Remove or limb only those fuels which if ignited have potential to spread fire outside the fireline.
- Before felling consider allowing ignited tree/snag to burn itself out. Ensure adequate safety measures are communicated if this option is chosen.

- Identify hazard trees with a lookout or flagging.
- If burning trees/snag pose a serious threat of spreading fire brands, extinguish fire with water or dirt whenever possible. Consider felling by blasting when feasible. Felling by crosscut or chainsaw should be the last resort.
- Align saw cuts to minimize visual impacts from more heavily traveled corridors. Slope cut away from line of sight when possible.

LOGISTICS

Campsite Considerations

- Locate facilities outside of wilderness whenever possible.
- Coordinate with the Resource Advisor in choosing a site with the most reasonable qualities of resource protection and safety concerns.
- Evaluate short-term low impact camps such as coyote or spike versus use of longer-term higher impact camps.
- Use existing campsites such as reserved sites used by outfitters if possible.
- New site locations should be on impact resistant and naturally draining areas such as rocky or sandy soils, or openings with heavy timber.
- Avoid camps in meadows, along streams or on lakeshores. Located at least 200 feet from lakes, streams, trails, or other sensitive areas.
- Consider impacts on both present and future users. An agency commitment to wilderness values will promote those values to the public.
- Lay out the camp components carefully from the start. Define cooking, sleeping, latrine, and water supply.
- Minimize the number of trails and ensure adequate marking.
- Consider fabric ground cloth for protection in high use areas such as around cooking facilities.
- Use commercial portable toilet facilities where available. If these cannot be used a latrine hole should be utilized.
- Select latrine sites a minimum of 200 feet from water sources with natural screening.
- Do not use nails in trees.
- Constantly evaluate the impacts which will occur, both short and long term.

Personal Camp Conduct

- Use “leave no trace” camping techniques.
- Minimize disturbance to land when preparing bedding site. Do not clear vegetation or trench to create bedding sites.
- Use stoves for cooking, when possible. If a campfire is used limit to one site and keep it as small as reasonable. Build either a “pit” or “mound” type fire. Avoid use of rocks to ring fires.
- Use down and dead firewood. Use small diameter wood, which burns down more cleanly.
- Don't burn plastics or aluminum – “pack it out” with other garbage.
- Keep a clean camp and store food and garbage so it is unavailable to bears. Ensure items such as empty food containers are clean and odor free, never bury them.
- Select travel routes between camp and fire and define clearly.
- Carry water and bathe away from lakes and streams. Personnel must not introduce soaps, shampoos or other personal grooming chemicals into waterways.

AVIATION MANAGEMENT

One of the goals of wilderness managers is to minimize the disturbance caused by air operations during an incident.

Aviation Use Guidelines

- Maximize back haul flights as much as possible.
- Use long line remote hook in lieu of constructed helispots for delivery or retrieval of supplies and gear.
- Take precautions to insure noxious weeds are not inadvertently spread through the deployment of cargo nets and other external loads.
- Use natural openings for helispots and paracargo landing zones as far as practical. If construction is necessary, avoid high visitor use areas.
- Consider maintenance of existing helispots over creating new sites.
- Obtain specific instructions for appropriate helispot construction prior to the commencement of any ground work.
- Consider directional falling of trees and snags so they will be in a natural appearing arrangement.
- Buck and limb only what is necessary to achieve safe/practical operating space in and around the landing pad area.

Retardant Use

During initial attack, fire managers must weigh the non-use of retardant with the probability of initial attack crews being able to successfully control or contain a wildfire. If it is determined that use of retardant may prevent a larger, more damaging wildfire, then the manager might consider retardant use even in sensitive areas. This decision must take into account all values at risk and the consequences of larger firefighting forces impact on the land.

- Consider impacts of water drops versus use of foam/retardant. If foam/retardant is deemed necessary, consider use of foam before retardant use.

HAZARDOUS MATERIALS

Flammable/Combustible Liquids

- Store and dispense aircraft and equipment fuels in accordance with National Fire Protection Association (NFPA) and Health and Safety Handbook requirements.
- Avoid spilling or leakage of oil or fuel, from sources such as portable pumps, into water sources or soils.
- Store any liquid petroleum gas (propane) downhill and downwind from firecamps and away from ignition sources.

Flammable Solids

- Pick up residual fusees debris from the fireline and dispose of properly.

Fire Retardant/Foaming Agents

- Do not drop retardant or other suppressants near surface waters.
- Use caution when operating pumps or engines with foaming agents to avoid contamination of water sources.

Fireline Explosives

- Remove all undetonated fireline explosives from storage areas and fireline at the conclusion of the incident and dispose of according to Bureau of Alcohol, Tobacco, and Firearms (BATF) and Fireline Blaster Handbook requirements. Properly dispose of all packaging materials.

FIRE REHABILITATION

Rehabilitation is a critical need. This need arises primarily because of the impacts associated with fire suppression and the logistics that support it. The process of constructing control lines, transport of personnel and materials, providing food and shelter for personnel, and other suppression activities has a significant impact on sensitive resources regardless of the mitigating measures used. Therefore, rehabilitation must be undertaken in a timely, professional manner.

During implementation, the resource advisor should be available for expert advice and support of personnel doing this work as well as quality control.

Rehabilitation Guidelines

- Pick up and remove all flagging, garbage, litter, and equipment. Dispose of trash appropriately.
- Clean fire pit of unburned materials and fill back in.
- Discourage use of newly established trails created during the suppression effort by covering with brush, limbs, small diameter poles, and rotten logs in a naturally appearing arrangement.
- Replace dug-out soil and/or duff and obliterate any berms created during the suppression effort.
- If impacted trails have developed on slopes greater than six percent, construct waterbars according to the following waterbar spacing guide:

Trail Percent Grade	Maximum Spacing Ft.
6-9	400
10-15	200
15-25	100
25+	50

- Where soil has been exposed and compacted, such as in camps, on user-trails, at helispots and pump sites, scarify the top 2-4 inches and scatter with needles, twigs, rocks, and dead branches. It is unlikely that seed and fertilizer for barren areas will be appropriate, in order to maintain the genetic integrity of the area. It may be possible, depending on the time of year and/or possibility of a rainy period, to harvest and scatter nearby seed, or to transplant certain native vegetation.

- Blend campsites with natural surroundings, by filling in and covering latrine with soil, rocks, and other natural material. Naturalize campfire area by scattering ashes in nearby brush (after making sure any sparks are out) and returning site to a natural appearance.

- Where trees were cut or limbed, cut stumps flush with ground, scatter limbs and boles, out of sight in unburned area. Camouflage stumps and tree boles using rocks, dead woody material, fragments of stumps, bolewood, limbs, soil and fallen or broken green branches. Scattered sawdust and shavings will assist in decomposition and be less noticeable. Use native materials from adjacent, unimpacted areas if necessary.
- Remove newly cut tree boles that are visible from trails or meadows. Drag other highly visible woody debris created during the suppression effort into timbered areas and disburse. Tree boles that are too large to move should be slant cut so a minimal amount of the cut surface is exposed to view. Chopping up the surface with an axe or pulaski, to make it jagged and rough, will speed natural decomposition.
- Leave tops of felled trees attached. This will appear more natural than scattering the debris.
- Consider using explosives on some stumps and cut faces of the bolewood for a more natural appearance.
- Consider, if no other alternatives are available, helicopter sling loading rounds and tops from a disturbed site when there has been an excessive amount of bucking, limbing and topping.
- Tear out sumps or dams, where they have been used, and return site to natural condition. Replace any displaced rocks or streambed material that has been moved. Reclaim streambed to its predisturbed state, when appropriate.
- Walk through adjacent undisturbed area and take a look at your rehab efforts to determine your success at returning the area to as natural a state as possible. Good examples should be documented and shared with others!

DEMOBILIZATION

Because demob is often a time when people are tired or when weather conditions are less than ideal, enough time must be allowed to do a good job. When moving people and equipment, choose the most efficient and least impactful method to both the landscape and fire organization mission. An on-the-ground analysis of “How Things Went” will be important.

POST-FIRE EVALUATION

Post-fire evaluation is important for any fire occurrence so management can find out how things went. Identify areas needing improvement, to formulate strategies and to produce quality work in the future. This activity is especially important in wilderness and like sensitive areas due to their fragility and inclination to long-term damage by human impacts.

Resource advisors and functional specialists such as wilderness rangers will be responsible for conducting the post-fire evaluation. They are the people who have the experience and knowledge to provide information required to make the evaluation meaningful and productive.

Post-fire evaluation will consist of data collection, documentation and recommendations. This process and report will, in most cases, be fairly simple and to the point. It should be accomplished before an overhead team departs from the fire. The evaluation emphasis should be on the MIST actions and not on the effects on the fire.

Evaluation will be completed on wildfires exceeding 100 acres and on a sample of fires less than 100 acres. It is appropriate to evaluate a diversity of fires, ranging from a spot fire suppressed by smokechasers or jumpers to a large project fire managed by an overhead team.

Region 1 is proposing a post-fire evaluation of sites, which includes data collection on campsites and helispots, using Coles Site Inventory System report INT-259, "Wilderness Campsite Monitoring Methods: A Source Book". Data collected will be added to inventories already completed for recreational impacts in wilderness. This information should provide managers with a clearer picture of which activities affect these "last, best places".

Data Collection/Documentation/Recommendations

This phase will be completed by a review of the rehab plan and visit to the fire site as soon after demobilization as possible. An inventory of comps and helispots will be completed using Coles Inventory System. This will also include an objective overview of other areas covered by the rehab plan.

Observations will be documented in a brief report to the line officer with a copy to the appropriate incident commander. In the report, the evaluator will include recommendations for ensuing fire suppression activities on similar lands. It is important that the evaluator recognize and commend the initial attack forces or overhead team for positive activities. Make special note of the extra efforts and sensitivity to suppression impacts.

Attached is a sample format for a Post-Fire Evaluation Report:

POST-FIRE EVALUATION

for
(Name of Fire)

EXISTING DIRECTION PERTINENT FOR FIRE

Forest Land Use Plan Allocation: Management Area

(THIS SPACE CAN BE USED TO INSERT THE GENERAL AND SPECIFIC FOREST PLAN DIRECTION FOR THE MANAGEMENT AREA)

Other Management Concerns/Guides: T & E Plants and Animals:

FINDINGS

- A. Resource Advisor Input and/or Actions:
(SHOULD INCLUDE A SYNOPSIS OF THE ACTIONS OF THE RESOURCE ADVISOR AND HIS INPUT INTO SUPPRESSION STRATEGIES/TACTICS)
- B. Escaped Fire Situation Analysis (EFSA)
(HOW DID THE EFSA RESPOND TO THE SENSITIVITIES OF THIS FIRE AREA)
- C. Line Direction to Incident Commander
(SYNOPSIS OF WHAT THE LINE OFFICER TOLD THE INCIDENT COMMANDER TO DO)
- D. Incident Action Plan
(SYNOPSIS OF HOW INCIDENT ACTION PLAN RESPONDED TO FIRE AREA)

ON-SITE VERIFICATION

(STATE HERE WHO MADE THE FIELD VISIT, THE DATE, AND WHAT OBSERVATIONS WERE MADE IN TERMS OF MEETING THE GUIDELINES FOR MIST)

OVERALL REVIEW EVALUATION

(INCLUDE OVERALL FINDINGS OF HOW WELL OBJECTIVES WERE ACCOMPLISHED IN TERMS OF MINIMUM IMPACT ACTIVITIES)

FOLLOWING IS AN EXAMPLE FROM A FIRE IN THE HELLS CANYON NATIONAL RECREATION AREA:

“Although not specifically documented as stated in the Forest Plan, Manuals or other directives, nor clearly visible in all the documents reviewed, the majority of pertinent management direction/resource objectives for this fire appeared to have been known, and were implemented.”

“Although it was recognized that the fires location may not result in adverse impact to salmon habitat, it wasnt clear that the Operation or Logistics sections were aware that some of the Wildfire Suppression Guidelines for Salmon Habitat relate to potential stream contamination during activities not directly performed on the fire site. (It is realized that these “Regional Guidelines” were issued 8/11/92 via D.G. and have not yet had wide distribution; therefore it is the intent of this review to help increase the awareness of the recent guidelines).”

REVIEW RECOMMENDATIONS

(WHAT AREAS CAN WE IMPROVE ON, WHERE DID WE DO GOOD, ETC.)

STANDARD FIRE ORDERS

- F** Fight fire aggressively but provide for safety first.
- I** Initiate all actions based on current and expected fire behavior.
- R** Recognize current weather conditions and obtain forecast.
- E** Ensure instructions are given and understood.

- O** Obtain current information on fire status.
- R** Remain in communication with crew members, your supervisor, and adjoining forces.
- D** Determine safety zones and escape routes.
- E** Establish lookouts in potentially hazardous situations.
- R** Retain control at all times.
- S** Stay alert, keep calm, think clearly, act decisively.

WATCH OUT SITUATIONS

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members/supervisor.
8. Constructing fireline without safe anchor point.
9. Building fireline downhill with fire below.
10. Attempting frontal assault on fire.
11. Unburned fuel between you and the fire.
12. Cannot see main fire, not in contact with anyone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather is getting hotter and drier.
15. Wind increases and/or changes direction.
16. Getting frequent spot fires across line.
17. Terrain and fuels make escape to safety zone difficult.